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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/914,894

09/04/2001

Amichai Heines

118/02339

6029

26418

7590

06/07/2004

REED SMITH, LLP

ATTN: PATENT RECORDS DEPARTMENT
599 LEXINGTON AVENUE, 29TH FLOOR
NEW YORK, NY 10022-7650

EXAMINER

ABDULSELAM, ABBAS I

ART UNIT

PAPER NUMBER

2674

11

DATE MAILED: 06/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/914,894

Applicant(s)

HEINES ET AL.

Examiner

Abbas I Abdulsalam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 66-70 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-65 is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

1. The terminal disclaimer filed on 03/18/04 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of the full statutory term of prior patent No. 6600474 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

2. Claims 1-65 are allowed.

Response to Arguments

3. Applicant's arguments, see # 10, filed 03/18/04, with respect to the rejection(s) of claim(s) 66-70 under 35 U.S.C. (103a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Marshall (USPN 6590549), Hotomi (USPN 5477249)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Webb (USPN 5477600) and Marshall (USPN 6590549).

Regarding claim 66, Webb discloses a micro-mechanical device (10) including semiconductor substrate (12), landing electrodes (14), address electrodes (16), and support posts (18) supporting deflectable beam (20) and suspending deflectable beam (20) over the landing electrodes (14) and address electrodes (16). Webb illustrates the device or otherwise known as deformable mirror device (10) in its deflected position (Fig. 1) when the voltage is applied between deflectable beam (20) and one of the address electrodes (16). Webb further teaches that the voltage applied normally causes deflectable beam to deflect toward the address electrode (16) and contact the immediately adjacent landing electrode (14), and when the voltage is removed, the deflectable beam returns to its undeflected position. See col. 2, lines 26-49. Webb does not specifically teach flipping the panel by applying a voltage. However, as mentioned above, Webb discloses voltage application to cause the deflectable beam to deflect so that an adjacent electrode is contacted. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize Webb's voltage application for the purpose of making an adjacent contact. One would have been motivated in view of the suggestion that voltage application can be equivalently used to obtain the desired flipping of the panel.

Webb does not teach of voltage being applied to a "landing electrode". Marshall on the other hand teaches the same voltage being applied to both the landing electrodes and the mirrors (102). See col. 5, lines 39-42 and Fig. 1.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Webb's micro-mechanical device to adapt Marshall's application

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of voltage to landing electrodes. One would have been motivated in view of the suggestion in Marshall that application of voltage to both the landing electrodes and mirrors can be used to satisfy the desired application of voltage to two electrodes. The use of voltage application to landing electrodes and mirrors helps function a micro-mirror device as taught by Marshall.

5. Claims 67-70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webb in view of Marshall and Hotomi (USPN 5477249).

Regarding claims 67-68, Webb in view of Marshall has been described above. In addition, Marshall teaches reset generation (800) as shown on Fig. 8 used to avoid sticking mirrors (col. 11, lines 21-30). Marshall also teaches landing electrodes limiting the rotation of the mirror (102) and prevents the rotated mirror (102) or hinge yoke (114) from touching the address electrodes (110), which have a voltage potential to the mirror (102). See col. 5, lines 32-38.

However, Webb does not teach the vibration being effected by suitable electrifying of a piezoelectric material coupled to the panel. Hotomi on the other hand teaches an electrostatic field formation (20) including vibration caused by piezoelectric vibrator (14) with respect to, grounding electrode (9), counter electrode (17) as shown on Fig. 1. Hotomi provides the teaching in the electrostatic energy as it relates to each pixel (col. 7, lines 18-22).

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Webb's electrode arrangement to adapt Hotomi's piezoelectric

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vibrator (14) as shown on Fig. 1. One would have been motivated in view of the suggestion in Hotomi that piezoelectric vibrator (14) equivalently provides the desired vibration with piezoelectric material. The use of piezoelectric vibrator (14) helps form images with specific configuration of electrodes as taught by Hotomi.

Regarding claims 69, Hotomi teaches a driving electrode (10) being connected via a driver (11) with a power source (12). See col. 3, lines 46-5 and Fig. 1. Marshall also teaches that the upper address electrodes (124) electrostatically attract the deflectable rigid member. See col. 6, lines 39-41.

Regarding claim 70, Marshall teaches reset generation (800) as shown on Fig. 8, used to avoid sticking mirrors (col. 11, lines 21-30). Marshall also discloses electrostatic attraction between the micro-mirror (412) and address electrodes (418) causing the mirror to rotate. See col. 9, lines 19-30.

Conclusion

6. The prior art made of record and not relied upon is considered to applicant's disclosure. The following arts are cited for further reference.

U.S. Pat. No. 4,607,287 to Endo et al.

U.S. Pat. No. 5,449,903 to Arney et al.

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7. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abdulsalam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

Any response to this action should be mailed to:

Commissioner of patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand delivered responses should be brought to Crystal Park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is (703) 306-0377.

Abbas Abdulsalam

Examiner

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May 25, 2004


XIAO WU
PRIMARY EXAMINER